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EXAMINER	
SHABMAN, MARK A	
ART UNIT	PAPER NUMBER
2856	
MAIL DATE	DELIVERY MODE
12/22/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/576,135	MANNEVILLE, SEBASTIEN	
	Examiner	Art Unit	
	MARK SHABMAN	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 9-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-7,9 and 10* is/are allowed.

6)☒ Claim(s) *11-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 October 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 10 October 2008 have been fully considered but they are not persuasive.

With regards to the arguments as they apply to claim 11, beginning on page 9 Applicant argues that the column 10 lines 18-22 of Sierro does not teach the combination of a shearing cell in combination with an ultrasonic transducer for making rheological measurements. Applicant argues that the Sierro reference "merely discloses that *other* parameters may be used in conjunction with a rheometer to analyze the response of a fluid to 'elastic waves' such as ultrasound waves. Examiner disagrees in that the Sierro reference does include the motivation for the addition of an ultrasonic transducer or similar device as one of the "other types of shearing cells" to analyze various parameters of a fluid. The fact that Sierro leads towards the addition of an ultrasonic device along with the rheometer currently present provides the motivation for combination with the Han reference even though Sierro does not explicitly disclose using said ultrasonic device for measuring rheological properties. One of ordinary skill in the art at the time of invention would have recognized the benefit of an additional ultrasonic device for analyzing certain parameters based on the disclosure provided by Sierro.

Applicant further argues that due to the fluid flow types of the Sierro and Han references, combination of the two would not have been obvious to one of ordinary skill in the art. Examiner disagrees under the premise that the type of flow is not limiting for

combination of Han with Sierro, and as both fluids under test are undergoing a flow one would be motivated to combine the ultrasonic device of Han with the rheometer of Sierro. Applicant states that there is "no definite answer" as to whether such a combination would prove operable, thus the argument that it would not do so is moot.

Allowable Subject Matter

Claims 1-7, 9 and 10 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: Independent claim 1, as amended, recites the limitation of using an ultrasonic transducer along with a rheometer to "simultaneously" collect ultrasonic data relating to the deformation of a specimen by ultrasonic wave measurment means and by ultrasonic data intercorrelation. The data is then used to determine rheological characteristics and velocity profiles along a Z-axis are determined. The reference of Sierro discloses a rheometer without any ultrasonic detection means which is capable of detecting rheological characteristics by use of a shearing cell and analysis through a microscope or other image processing equipment. The apparatus as disclsoed by Han, does in fact use an ultrasonic measurement means to determine rheological properties of a fluid, but does not use the shearing cell with "two surfaces" that undergo "relative movement, one with respect to the other" as is claimed. Han however does not teach the method of intercorrelation as is claimed and described in the specification of two signals generated

by the response of the ultrasonic transmitter. As claims 2-7 and 9-10 depend from claim 1, they are deemed allowable for the same reasons.

Claim Objections

Claim 11 is objected to because of the following informalities: the term "wherein it" on line 4 of the claim should be changed to replace the word "it" with --the device-- for example to avoid any confusion. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sierro US Patent 6,535,790 B1(hereinafter referred to as Sierro) in view of Han US Patent 6,378,357 B1 (hereinafter referred to as Han).

Regarding **claim 11**, Sierro discloses an apparatus for characterizing complex fluids wherein a liquid specimen put under a shearing strain in a rheometer to measure the rheological properties (column 5). Sierro further states that this shearing device

could be a Couette cell as shown in figure 15. Due to the basic operation of a Couette cell, this reads on "two surfaces in relative movement one with respect to the other" in which stress is applied to the fluid in between as claimed. Sierro does not disclose ultrasonic wave measurement means as is claimed, however *does* state in column 10 line 23 the use of ultrasound to measure various parameters of the sample would be useful.

Han discloses a device for fluid rheology characterization in which ultrasound is used to analyze a fluid. Ultrasonic signals are used to measure the rheological properties of a fluid as described in the summary of the invention. Any rheological characteristics measured would be "local" to the ultrasonic device as claimed. Han describes sending ultrasonic waves into the specimen in pulse sequences, reading on the "sequence of pulse firings" as claimed. The apparatus further comprises a wave receiver for detecting reflected beams or "echos" reflected back from particles in the fluid stream. Each reflection corresponds to a "wave firing" and as the firings are sequential, they are used to monitor the deformation of the fluid (caused by stress) "as a function of time." Since fluid flow is affected by the deformation of the fluid, the combination of Sierro in view of Han reads on the claim in its entirety. Since it is disclosed in the description of Sierro to use the rheological cell in combination with ultrasonic equipment, it would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Sierro and Han to create a method in which the rheological properties of a fluid are tested via stressing a liquid and measuring its properties with ultrasonic means.

Regarding **claim 12**, column 3 of Han discloses the emitting of ultrasonic waves up to 500 MHz which is greater than 20 MHz as claimed.

Regarding **claim 13**, as disclosed previously, the apparatus of Sierro comprises a Couette cell as is claimed. A thickness of the Couette cell is not disclosed by Sierro, however it would be desirable to design it to be as thin as possible while still structurally sound to allow for penetration by the ultrasonic waves. This could be 4mm or less as claimed to reduce the power needed for the transmitting wave.

Regarding **claim 14**, Han discloses in figure 3 and column 4 an array of sample regions. Each region is analyzed separately, however it is stated that the sample regions can be analyzed simultaneously in parallel. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the teachings of Han to emit and receive multiple signals at once by reproducing the ultrasonic means to form an array of transducers.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARK SHABMAN whose telephone number is (571)270-3263. The examiner can normally be reached on M-F 8:00am - 4:30pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. S./
Examiner, Art Unit 2856
/Hezron Williams/
Supervisory Patent Examiner, Art Unit 2856